



Pulsed Terahertz Radiation Electro-Optic Detector (EOD)

An electro-optic detector (EOD) is intended for registration of the pulsed terahertz (THz) radiation. It is characterized by availability of integrated optics as well as built-in lock-in amplifier.

This detector has the following functions: signal conditioning; automatic signal balance fine tuning on photo-detectors; facility of mechanical delay circuit control by means of the proprietary software supplied with the EOD is envisaged. Application field of this device includes time-domain spectroscopy (TDS).

Built-in optics provides capability to integrate this detector into a finished measuring circuit (experimental circuit, etc). A lock-in amplifier provides high signal/noise ratio as well as makes the detector itself more compact and convenient when installing and operating. Signal conditioning function ensures invariance of the high signal/noise ratio and accurate measurement of time shape of THz impulse in case of power level fluctuations of the input signal and pumping laser.

Modern software developed for operation with Windows operating system (XP, Vista, 7) enables easy control of the EOD parameters, and display of the measurement data. There is also a facility to control of the delay-line of the TDS system.



Model of the EOD	EOD-NIR	EOD-MIR
EO optical pair crystal – photodiode	ZnTe – Si	CdTe – InGaAs
Signal radiation wavelength, nm	600–1100	1100–1700
Signal radiation spectral width (Full width at half maximum /FWHM/), nm		11–20
Spectral sensitivity, THz		0.1–4
Signal radiation impulse duration, fs		<120
Signal-carrying beam power, mW		1–20
Minimal required power of THz radiation, nW		1
Lock-in amplifier modulation frequency, Hz		15–250000
Lock-in amplifier gain		100–30000
Lock-in amplifier time constant, s		0.003–10
Operating temperature, °C		5–45
Storage temperature, °C		0–60
Air humidity, %		5–85
Voltage, V		110/220
Frequency, Hz		50
Power consumption, W		18
EOD overall dimensions (L×W×H), mm		268.0×82.0×42.5
Weight, kg		0.8